NEIL ABERCROMBIE
GOVERNOR OF HAWAII

LINDA ROSEN, M.D., M.P.H.
DIRECTOR OF HEALTH

STATE OF HAWAII
DEPARTMENT OF HEALTH
P. O. BOX 3378
HONOLULU, HI 96801-3378

In reply, please refer to:
File:

06002.PMR.14a
DATE: June 2, 2014
NPDES PERMIT NO. HI 0021113

FACT SHEET: APPLICATION FOR RENEWAL OF NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT AND ZONE OF MIXING (ZOM) TO DISCHARGE TO THE PACIFIC OCEAN, WATERS OF THE UNITED STATES

PERMITTEE: COUNTY OF HAWAII
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

FACILITY: PAPAIKOU WASTEWATER TREATMENT PLANT (PWWTP)

FACILITY MAILING ADDRESS
County of Hawaii
Papaikou Wastewater Treatment Plant
108 Railroad Avenue
Hilo, Hawaii 96720
Contact: Ms. Dora Beck, P.E.
Wastewater Division Chief
Telephone No.: (808) 961-8513
Email: dbeck@co.hawaii.hi.us

FACILITY STREET ADDRESS
County of Hawaii
Papaikou Wastewater Treatment Plant
27-2138 Hawaii Belt Road
Papaikou, Hawaii 96781
TMK No. (3) 2-7-004:126

PERMITTEE MAILING ADDRESS
County of Hawaii
Department of Environmental Management
25 Aupuni Street
Hilo, Hawaii 96720
Contact: Ms. Bobby Jean Leithead-Todd
Director
Telephone No. : (808) 961-8083
Email: bjltodd@co.hawaii.hi.us

AUTHORIZED REPRESENTATIVE
County of Hawaii
Dept. of Environmental Management,
Wastewater Division
108 Railroad Avenue
Hilo, Hawaii 96720
Contact: Ms. Dora Beck, P.E.
Wastewater Division Chief
Telephone No.: (808) 961-8513
Email: dbeck@co.hawaii.hi.us

Table of Contents

This Fact Sheet includes the legal requirements and technical rationale that serve as the basis for the requirements of the draft permit.

A. Permit Information

The following table summarizes administrative information related to the Papaikou Wastewater Treatment Plant (hereinafter, facility).

Table F-1. Facility Information

Permittee	County of Hawaii, Department of Environmental Management
Name of Facility	Papaikou Wastewater Treatment Plant
Facility Address	27-2138 Hawaii Belt Road Papaikou, Hawaii 96781
Facility Contact, Title, and Phone	Ms. Dora Beck, Wastewater Division Chief, (808) 961-8513
Authorized Person to Sign and Submit Reports	Ms. Bobby Jean Leithead-Todd, Director, (808) 961-8083 Ms. Dora Beck, Wastewater Division Chief, (808) 961-8513
Mailing Address	108 Railroad Avenue Hilo, Hawaii 96720
Billing Address	Same as above
Type of Facility	Wastewater Treatment Plant
Pretreatment Program	No
Reclamation Requirements	No
Facility Design Flow	0.35 million gallons per day (MGD)
Receiving Waters	Outfall Serial No. 001: Pacific Ocean at Waipahi Point
Receiving Water Type	Pacific Ocean: Marine
Receiving Water Classification	Outfall Serial No. 001: Class A Wet Open Coastal Waters (HAR, Section 11-54-06(b)(2)(B))

1. NPDES Permit No. HI 0021113, including ZOM, became effective on June 4, 2009 and expired on September 30, 2013. The Permittee reapplied for an NPDES permit and ZOM on June 25, 2013. The Hawaii Department of Health (hereinafter DOH) administratively extended the existing permit on October 8, 2013, pending the reapplication process.

2. The Director of Health (hereinafter Director) proposes to issue a permit to discharge to the waters of the state until **June 1, 2019**, and has included in the draft permit those terms and conditions which are necessary to carry out the provisions of the Federal Water Pollution Control Act (P.L. 92-500), Federal Clean Water Act (CWA) (P.L. 95-217) and Chapter 342D, Hawaii Revised Statutes.

B. Facility Setting

1. Facility Operation and Location

The Permittee owns and operates the facility, located in Papaikou, about five miles from Hilo on the island of Hawaii. The facility treats domestic sewage from

residential homes located within the towns of Papaikou and Paukaa, Hawaii. The facility has a design flow capacity of 0.35 million gallons per day (MGD) and provides secondary level treatment of wastewater for a population of approximately 1,900 (1,400 from Papaikou and 500 from Paukaa) from domestic sources. The annual average flow rates for the last three years were 0.08 MGD, 0.09 MGD, and 0.06 MGD. Treatment consists of screen/grit removal, biological treatment using activated sludge, secondary clarification, chlorination, and dechlorination. The sludge is treated by aerobic digestion, gravity-thickening, and is dewatered using a dual cell gravity filter (DCG) and ultimately disposed in a landfill.

Secondary treated wastewater effluent is discharged to the Pacific Ocean at Waipahi Point, through Outfall Serial No. 001 at latitude 19° 46' 58" N and longitude 155° 05' 09" W, NAD 83.

Outfall Serial No. 001 is located at Waipahi Point along the shoreline that discharges treated effluent approximately ten (10) feet above the foot of a rocky cliff face.

Storm water discharges associated with industrial facilities coverage is not applicable to this facility. 40 CFR 122.26(a) requires storm water discharges associated with industrial activity to obtain NPDES permit coverage. 40 CFR 122.26(b)(14)(ix) identifies treatment works treating domestic sewage or any other sewage sludge or wastewater treatment device or system with a design flow of 1.0 mgd or more, or required to have an approved pretreatment program under 40 CFR Part 403 as a facility considered to be engaging in industrial activity. This facility does not meet this criteria as it has a design flow of less than 1.0 mgd and is not required to have an approved pretreatment program.

Figures 1 and 2 of the draft permit provide maps showing the location of the facility, the Zone of Mixing (ZOM), and receiving water monitoring station locations.

2. Receiving Water Classification

The Pacific Ocean at Waipahi Point, is designated as "Class A Wet Open Coastal Waters" under Section 11-54-06(b)(2)(B), Hawaii Administrative Rules (HAR). Protected beneficial uses of Class A waters include recreation, aesthetic enjoyment, and the protection and propagation of fish, shellfish, and wildlife.

3. Ocean Discharge Criteria

The Director has considered the Ocean Discharge Criteria, established pursuant to Section 403(c) of the CWA for the discharge of pollutants into the territorial sea, the waters of the contiguous zone, or the oceans. The United States Environmental Protection Agency (EPA) has promulgated regulations for Ocean

Discharge Criteria in 40 Code of Federal Regulations (CFR) Part 125, Subpart M. The Director has determined that the discharge will not cause unreasonable degradation to the marine environment. Based on current information, the Director proposes to issue a permit.

4. Impaired Water Bodies on CWA 303(d) List

CWA section 303(d) requires states to identify specific water bodies where water quality standards are not expected to be met after implementation of technology-based effluent limitations on point sources.

On September 20, 2013, the EPA approved the 2012 State of Hawaii Water Quality Monitoring and Assessment Report, which includes the 2012 303(d) List of Impaired Water Bodies in the State of Hawaii.

The Pacific Ocean at Waipahi Point is reported as a Category 2 and 3 waterbody and is not listed as impaired in the 2012 303(d). The 2012 303(d) list shows Waipahi Point as attaining water quality for total nitrogen, ammonia nitrogen, nitrate+nitrite, total phosphorus, turbidity, and chlorophyll a. At present, no TMDLs have been established for this waterbody.

5. Summary of Existing Effluent Limitations

Existing Effluent Limitations and Monitoring Data – Outfall Serial No. 001

Effluent limitations contained in the existing permit for discharges from Outfall Serial No. 001 and representative monitoring data from September 2008 through August 2013 is presented in the following table.

Table F-2. Historic Effluent Limitations and Monitoring Data – Outfall Serial No. 001

Parameter	Units	Effluent Limitation			Reported Data[1]		
		Average Monthly	Average Weekly	Maximum Daily	Average Monthly	Average Weekly	Maximum Daily
Flow	MGD	[2]	--	[2]	0.249	--	0.776
Biochemical Oxygen Demand (5-Day)	mg/L	30	45	--	4.6	9.4	9.4
	kg/day	40	60	--	3.3	10.9	--
	% Removal	As a monthly average, not less than 85 percent removal efficiency from influent stream.			94[3]		
Total Suspended Solids	mg/L	30	45	--	10.2	13.6	13.6
	kg/day	40	60	--	8.1	16	--
	% Removal	As a monthly average, not less than 85 percent removal efficiency from influent stream.			93[3]		
pH	standard units	Not less than 6.0 nor greater than 9.0			6.1 – 7.4		
Total Residual Chlorine	µg/L	--	--	13.0	--	--	8.0

Parameter	Units	Effluent Limitation			Reported Data[1]		
		Average Monthly	Average Weekly	Maximum Daily	Average Monthly	Average Weekly	Maximum Daily
Enterococci	CFU/100 mL	7[4]	--	--	6[5]	--	--
Total Nitrogen	mg/L	--	--	[2]	--	--	34.0
Ammonia Nitrogen	mg/L	--	--	[2]	--	--	4.3
Nitrate + Nitrite Nitrogen	mg/L	--	--	[2]	--	--	32.9
Total Phosphorus	mg/L	--	--	[2]	--	--	3.1
Turbidity	N.T.U.	--	--	[2]	--	--	2.6

[1] Source: Monthly DMR's submitted by the Permittee from September 2008 through August 2013.
[2] No effluent limitations for this pollutant in the previous permit, only monitoring required.
[3] Represents the minimum reported percent removal.
[4] Minimum monitoring frequency of five (5) days per quarter meaning equally spaced intervals or unequally spaced at five (5), six (6), seven (7), or eight (8) day intervals, provided that the total period covered is between 25 and 30 days.
[5] Data represents the maximum reported geometric mean taken during the 25 to 30 day periods.

6. Compliance Summary

The following table lists effluent limitation exceedances as identified in the monthly, quarterly, and annual DMRs submitted by the Permittee from September 2008 to August 2013.

Table F-3. Summary of Compliance History

Monitoring Period	Violation Type	Pollutant	Reported Value	Permit Threshold Value	Units
01/01/09 - 01/31/09	Quarterly	Ammonia Nitrogen	4.3	1.1[1]	mg/l
9/01/08 - 9/30/08	Quarterly	Total Phosphorus	2.83	2.7[1]	mg/l
10/01/08 - 10/31/08	Quarterly	Total Phosphorus	2.89	2.7[1]	mg/l
11/01/08 - 11/30/08	Quarterly	Total Phosphorus	2.72	2.7[1]	mg/l
12/01/08 - 12/31/08	Quarterly	Total Phosphorus	3.07	2.7[1]	mg/l
2/01/10 - 2/28/10	Quarterly	Total Phosphorus	3.06	2.7[1]	mg/l
5/01/10 - 5/31/10	Quarterly	Total Phosphorus	2.91	2.7[1]	mg/l
7/01/10 - 7/31/10	Quarterly	Total Phosphorus	2.93	2.7[1]	mg/l
8/01/10 - 8/31/10	Quarterly	Total Phosphorus	2.95	2.7[1]	mg/l
10/01/10 - 10/31/10	Quarterly	Total Phosphorus	2.75	2.7[1]	mg/l
11/01/10 - 11/30/10	Quarterly	Total Phosphorus	2.98	2.7[1]	mg/l
2/01/11 - 2/28/11	Quarterly	Total Phosphorus	2.71	2.7[1]	mg/l

[1] Permit Threshold Value - not permit violation.

7. Planned Changes

There are no planned changes expected during the term of the draft permit.

C. Applicable Plans, Policies, and Regulations

1. Hawaii Administrative Rules, Chapter 11-54

On November 12, 1982, the Hawaii Administrative Rules, Title 11, Department of Health, Chapter 54 became effective (hereinafter HAR, Chapter 11-54). HAR, Chapter 11-54 was amended and compiled on October 6, 1984; April 14, 1988; January 18, 1990; October 29, 1992; April 17, 2000; October 2, 2004; June 15, 2009; October 21, 2012; and the most recent amendment was on December 6, 2013. HAR, Chapter 11-54 establishes beneficial uses and classifications of state waters, the state antidegradation policy, zones of mixing standards, and water quality criteria that are applicable to the Pacific Ocean at Waipahi Point.

Requirements of the draft permit implement HAR, Chapter 11-54.

2. Hawaii Administrative Rules, Chapter 11-55

On November 27, 1981 HAR, Title 11, Department of Health, Chapter 55 became effective (hereinafter HAR, Chapter 11-55). HAR Chapter 11-55 was amended and compiled on October 29, 1992; September 22, 1997; January 6, 2001; November 7, 2002; August 1, 2005; October 22, 2007; June 15, 2009; October 21, 2012; and the most recent amendment was on December 6, 2013. HAR, Chapter 11-55 establishes standard permit conditions and requirements for NPDES permits issued in Hawaii.

Requirements of the draft permit implement HAR, Chapter 11-55.

3. State Toxics Control Program

NPDES Regulations at 40 CFR 122.44(d) require permits to include water quality-based effluent limitations (WQBELs) for pollutants, including toxicity, that are or may be discharged at levels that cause, have reasonable potential to cause, or contribute to an exceedance of a water quality standard. The *State Toxics Control Program: Derivation of Water Quality-Based Discharge Toxicity Limits for Biomonitoring and Specific Pollutants* (hereinafter, STCP) was finalized in April, 1989, and provides guidance for the development of water quality-based toxicity control in NPDES permits by developing the procedures for translating water quality standards in HAR, Chapter 11-54 into enforceable NPDES permit limitations. The STCP identifies procedures for calculating permit limitations for specific toxic pollutants for the protection of aquatic life and human health.

Guidance contained in the STCP was used to determine effluent limitations in the draft permit.

D. Rationale for Effluent Limitations and Discharge Specifications

The CWA requires point source dischargers to control the amount of conventional, non-conventional, and toxic pollutants that are discharged into the waters of the United States. The control of pollutants discharged is established through effluent limitations and other requirements in NPDES permits. NPDES regulations establish two principal bases for effluent limitations. At 40 CFR 122.44(a), permits are required to include applicable technology-based limitations and standards; and at 40 CFR 122.44(d), permits are required to include WQBELs to attain and maintain applicable numeric and narrative water quality criteria to protect the beneficial uses of the receiving water. When numeric water quality objectives have not been established, but a discharge has the reasonable potential to cause or contribute to an excursion above a narrative criterion, WQBELs may be established using one or more of three methods described at 40 CFR 122.44(d) – 1) WQBELs may be established using a calculated water quality criterion derived from a proposed state criterion or an explicit state policy or regulation interpreting its narrative criterion; 2) WQBELs may be established on a case-by-case basis using EPA criteria guidance published under CWA Section 304(a); or 3) WQBELs may be established using an indicator parameter for the pollutant of concern.

1. Technology-Based Effluent Limitations

a. Scope and Authority

Section 301(b) of the CWA and implementing EPA permit regulations at 40 CFR 122.44 require that permits include conditions meeting applicable technology-based requirements at a minimum, and any more stringent effluent limitations necessary to meet applicable water quality standards. The discharge authorized by this permit must meet minimum federal technology-based requirements based on Secondary Treatment Standards at 40 CFR 133.

Regulations promulgated in 40 CFR 125.3(a)(1) require technology-based effluent limitations for municipal dischargers to be placed in NPDES permits based on Secondary Treatment Standards or Equivalent to Secondary Treatment Standards.

The Federal Water Pollution Control Act Amendments of 1972 (PL 92-500) established the minimum performance requirements for publically owned treatment works (POTWs) [defined in section 304(d)(1)]. CWA Section 301(b)(1)(B) requires that such treatment works must, at a minimum, meet effluent limitations based on secondary treatment as defined by the EPA Administrator.

Based on this statutory requirement, EPA developed secondary treatment regulations, which are specified in 40 CFR 133. These technology-based regulations apply to all municipal wastewater treatment plants and identify the

minimum level of effluent quality attainable by secondary treatment in terms of 5-day biochemical oxygen demand (BOD_5), total suspended solids (TSS), and pH.

b. Applicable Technology-Based Effluent Limitations

At 40 CFR 133 in the Secondary Treatment Regulations, EPA has established the minimum required level of effluent quality attainable by secondary treatment shown in Table F-4 below. The standards in Table F-4 are applicable to the facility and therefore established in the draft permit as technology-based effluent limitations.

Table F-4. Applicable Technology-Based Effluent Limitations

Parameter	Units	30-Day Average	7-Day Average
BOD_5[1]	mg/L	30	45
TSS[1]	mg/L	30	45
pH	standard units	6.0 – 9.0	

[1] The 30-day average percent removal shall not be less than 85 percent.

2. Water Quality-Based Effluent Limitations (WQBELs)

a. Scope and Authority

NPDES Regulations at 40 CFR 122.44(d) require permits to include WQBELs for pollutants, including toxicity, that are or may be discharged at levels that cause, have reasonable potential to cause, or contribute to an exceedance of a water quality standard, including numeric and narrative objectives within a standard (reasonable potential). As specified in 40 CFR 122.44(d)(1)(i), permits are required to include WQBELs for all pollutants "which the Director determines are or may be discharged at a level that will cause, have reasonable potential to cause, or contribute to an excursion above any state water quality standard."

The process for determining reasonable potential and calculating WQBELs, when necessary, is intended to protect the receiving waters as specified in HAR, Chapter 11-54. When WQBELs are necessary to protect the receiving waters, the DOH has followed the requirements of HAR, Chapter 11-54, the STCP, and other applicable State and federal guidance policies to determine WQBELs in the draft permit.

Where reasonable potential has been established for a pollutant, but there is no numeric criterion or objective for the pollutant, WQBELs must be established in accordance with the requirements of 40 CFR 122.44(d)(1)(vi), using (1) EPA criteria guidance under CWA Section 304(a), supplemented

where necessary by other relevant information; (2) an indicator parameter for the pollutant of concern; or (3) a calculated numeric water quality criterion, such as a proposed state criterion or policy interpreting the state's narrative criterion, supplemented with other relevant information.

b. Applicable Water Quality Standards

The beneficial uses and water quality standards that apply to the receiving waters for this discharge are from HAR, Chapter 11-54.

(1) HAR, Chapter 11-54. HAR, Chapter 11-54 specifies numeric aquatic life standards for 72 toxic pollutants and human health standards for 60 toxic pollutants, as well as narrative standards for toxicity. Effluent limitations and provisions in the draft permit are based on available information to implement these standards.

(2) Water Quality Standards. The facility discharges to the Pacific Ocean at Waipahi Point, which is classified as a marine Class A Wet Open Coastal Waters in HAR, Chapter 11-54. As specified in HAR, Chapter 11-54, saltwater standards apply when the dissolved inorganic ion concentration is above 0.5 parts per thousand. As such, a reasonable potential analysis (RPA) was conducted using saltwater standards. Additionally, human health water quality standards were also used in the RPA to protect human health. Where both saltwater standards and human health standards are available for a particular pollutant, the more stringent of the two will be used in the RPA.

As specified in HAR, Chapter 11-54-4(b)(3), aquatic life (both acute and chronic) and fish consumption WQSs are applicable to the receiving water. Thus, the most stringent of the WQSs have been used for the RPA.

However, as described in Part D.2.d.(1) of this Fact Sheet, the STCP specifies the methods for establishing WQBELs for toxics based on discharge type. For discharges without submerged outfalls, effluent limitations are to be based on the acute WQS. The STCP states that discharges without submerged outfalls do not induce rapid dilution and are therefore assimilation in the receiving waters is controlled by ambient processes which may provide little or no dilution over time frames significant to aquatic toxicity, particularly acute toxicity. Thus, reasonable potential may be established based on the chronic WQS, and the effluent limitation may be based on the acute WQS.

40 CFR 122.45(c) requires effluent limitations for metals to be expressed as total recoverable metal. Since water quality standards for metals are expressed in the dissolved form in HAR, Chapter 11-54, factors or

translators must be used to convert metal concentrations from dissolved to total recoverable. Default EPA conversion factors were used to convert the applicable dissolved criteria to total recoverable.

(3) Receiving Water Hardness. HAR, Chapter 11-54 contains water quality criteria for six metals that vary as a function of hardness in freshwater. A lower hardness results in a lower freshwater water quality standard. The metals with hardness dependent standards include cadmium, copper, lead, nickel, silver, and zinc. Ambient hardness values are used to calculate freshwater water quality standards that are hardness dependent. Since saltwater standards are used for the RPA, the receiving water hardness was not taken into consideration when determining reasonable potential.

c. Determining the Need for WQBELs

NPDES regulations at 40 CFR 122.44(d) require effluent limitations to control all pollutants which are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any state water quality standard. Assessing whether a pollutant has reasonable potential is the fundamental step in determining whether or not a WQBEL is required. Using the methods prescribed in EPA's *Technical Support Document for Water Quality-Based Toxics Control* (the TSD, EPA/505/2-90-001, 1991), the effluent data from Outfall Serial No. 001 were analyzed to determine if the discharge demonstrates reasonable potential. The RPA compared the effluent data with numeric and narrative water quality standards in HAR, Chapter 11-54-4. To determine reasonable potential for nutrients contained in HAR, Chapter 11-54-6, a direct comparison of the receiving water concentrations at the edge of the ZOM was compared to the most stringent WQS.

(1) Reasonable Potential Analysis (RPA). The RPA for pollutants with WQS specified in HAR, Chapter 11-54-4, based on the TSD, combines knowledge of effluent variability as estimated by a coefficient of variation with the uncertainty due to a limited number of data to project an estimated maximum receiving water concentration as a result of the effluent. The estimated receiving water concentration is calculated as the upper bound of the expected lognormal distribution of effluent concentrations at a high confidence level. The projected maximum receiving water concentration, after consideration of dilution, is then compared to the WQS in HAR, Chapter 11-54 to determine if the pollutant has reasonable potential. The projected maximum receiving water concentration has reasonable potential if it cannot be demonstrated with a high confidence level that the upper bound of the lognormal distribution of effluent concentrations is below the receiving water standards.

Because the most stringent WQS for pollutants specified in HAR, Chapter 11-54-6 are provided as geometric means and exceedances of these WQS are less sensitive to effluent variability, the RPA for pollutants in HAR, Chapter 11-54-6 was conducted by doing a direct comparison of the maximum effluent concentration to the most stringent applicable WQS.

(2) Effluent and Receiving Water Data. The RPA was based on effluent monitoring data submitted to DOH in DMRs from September 2008 through August 2013 and receiving water data submitted to the DOH in DMRs from June 2008 through November 2012.

(3) Dilution. The STCP defines dilution as the reduction in the concentration of a pollutant or discharge which results from mixing with the receiving waters, and discusses dilution for the two main categories of direct dischargers in Hawaii, marine discharges with submerged outfalls and marine dischargers without submerged outfalls. It states a submerged outfall provides discharge induced dilution while most surface discharges do not. The facility discharges through an outfall that is not submerged; thus, dilution would not typically be granted for any of the discharges from the facility. However, DOH has historically regulated discharges from the facility with compliance measured in the receiving water (ZOM), effectively providing dilution.

Allowing compliance with water quality standards within the receiving water is allowing dilution. DOH has made a historical site-specific exception for total nitrogen, ammonia nitrogen, nitrate + nitrite nitrogen, total phosphorus, turbidity, pH, chlorophyll a, temperature, dissolved oxygen, and salinity discharges related to this specific discharge at the facility. ZOM data indicates that the applicable water standards have been achieved in the receiving water during this time period for these pollutants and 87% of the time for ammonia nitrogen. Due to the historic site-specific exception, dilution has been carried over for these pollutants only. Dilution is not granted for toxics.

HAR chapter 11-54-9 allows the use of a ZOM to demonstrate compliance with WQS. ZOMs consider initial dilution, dispersion, and reactions from substances which may be considered to be pollutants. However, due to other potential sources of pollutants into the receiving water, such as storm water runoff or unidentified discharges, it is often problematic to determine the cause of WQS exceedances in the receiving water at the edge of a ZOM. It is more practical to determine the available dilution provided in the ZOM and apply that dilution to the WQS to calculate an effluent limitation that can be applied end-of-pipe. However, an available dilution at the edge of the ZOM is not currently known for this discharge. Thus, for Section 11-54-6(b)(3) parameters, reasonable potential to contribute to an exceedance of WQS is most reasonably assessed by

comparing monitoring data at the edge of the ZOM to the applicable WQS. If an annual geometric mean at the edge of a ZOM exceeds the applicable WQS, the Permittee is determined to have reasonable potential for the pollutant. If an exceedance of WQS is not observed at the edge of the ZOM, it is assumed that sufficient dilution and assimilative capacity exists to meet WQS at the edge of the ZOM.

Where reasonable potential has been determined for Section 11-54-6(b)(3) pollutants, limitations must be established that are protective of water quality. Because the dilution at the edge of the ZOM is not known, where assimilative capacity exists this permit establishes limitations for Section 11-54-6(b)(3) pollutants as performance-based effluent limitations and receiving water limitations and requires the Permittee to conduct a dilution analysis at the edge of the ZOM so that end-of-pipe water quality-based effluent limitations may be established during future permitting efforts. Where assimilative capacity does not exist, it is not appropriate to grant a ZOM and/or dilution, and an end-of-pipe criteria-based effluent limitation must be established that is protective of WQS.

Assimilative capacity for pollutants with reasonable potential is evaluated for Section 11-54-6(b)(3) pollutants by aggregating all ZOM control station data annually and comparing the annual geometric means to the applicable WQS. If an annual geometric mean exceeds 90 percent of the WQS, assimilative capacity is determined to be insufficient and dilution may not be granted.

(4) Summary of RPA Results. The maximum effluent concentrations from the DMRs over the current permit term, maximum projected receiving water concentration calculated using methods from the TSD, the applicable HAR, Section 11-54-4(b)(3) and 11-54-6(b)(3) water quality standard, and result of the RPA for pollutants discharged from Outfall Serial No. 001 are presented in Table F-5, below. Only pollutants detected in the discharge are presented in Table F-5. All other pollutants were not detected and therefore, no reasonable potential exists.

Table F-5. Summary of RPA Results

Parameter	Units	Number of Samples	Maximum Effluent Concentration	Maximum Projected Concentration	Applicable Water Quality Standard	RPA Results
Total Residual Chlorine	µg/L	59	8	11.5	7.5[3]	**Yes**
Total Nitrogen	µg/L	[2]	132.5[1]	NA	150	No
Ammonia Nitrogen	µg/L	[2]	8.46[1]	NA	3.5	**Yes**
Nitrate + Nitrite Nitrogen	µg/L	[2]	2.38[1]	NA	5	No
Total Phosphorus	µg/L	[2]	15.0[1]	NA	20	No

NA = Not Applicable
[1] Maximum annual geometric mean at the edge of the ZOM.
[2] Semi-annual data for 5 years (2008 – 2012).
[3] Note that the chronic criteria is applicable for RPA purposes, however the acute criteria is the applicable criteria for establishing effluent limitations for this discharge.

(5) Reasonable Potential Determination.

(a) Constituents with limited data. In some cases, reasonable potential cannot be determined because effluent data are limited. The draft permit requires the Permittee to continue to monitor for these constituents in the effluent using analytical methods that provide the lowest available detection limitations. When additional data become available, further RPAs will be conducted to determine whether to add numeric effluent limitations to this draft permit or to continue monitoring.

Chlorine was the only pollutant listed in HAR, Section 11-54-4(b)(3) for which data was available (chlorination is used in the wastewater treatment). Like, the previous permit (except for chlorine), the proposed permit does not require toxic pollutant monitoring. This is because the presence of toxic pollutants in the effluent was not identified in the permit application, the facility is not a major POTW, and this facility does not receive any industrial wastewater.

(b) Pollutants with No Reasonable Potential. WQBELs are not included in this draft permit for constituents listed in HAR, Chapter 11-54-4(3) and 11-54-6(b)(3) that do not demonstrate reasonable potential; however, monitoring for such pollutants is still required in order to collect data for future RPAs. Pollutants with no reasonable potential consist of those identified as such in Table F-5 or any pollutant not discussed in Parts D.2.c.(5).(a) or D.2.c.(5).(c) of this Fact Sheet.

(c) Pollutants with Reasonable Potential. The RPA indicated that chlorine and ammonia nitrogen have reasonable potential to cause or contribute to an excursion above state water quality standards. Further, due to the nature of the discharge (secondary treated wastewater) and the potential human health concerns from pathogens, effluent limitations for enterococcus have been established. Thus, WQBELs have been established in this draft permit at Outfall Serial No. 001 for chlorine, ammonia nitrogen, and enterococcus.

The WQBELs were calculated based on water quality standards contained in HAR, Chapter 11-54 and procedures contained in both STCP and HAR, Chapter 11-54, as discussed in Part D.2.d, below.

d. WQBEL Calculations

Specific pollutant limits may be calculated for both the protection of aquatic life and human health.

(1) WQBELs based on Aquatic Life Standards. The STCP categorizes a discharge from a facility into one of four categories: (1) marine discharges through submerged outfalls; (2) discharges without submerged outfalls; (3) discharges to streams; or (4) high-rate discharges. Once a discharge has been categorized, effluent limitations for pollutants with reasonable potential can be calculated, as described below.

(a) For marine discharges through submerged outfalls, the daily maximum effluent limitation shall be the product of the chronic water quality standard and the minimum dilution factor;

(b) For discharges without submerged outfalls, the daily maximum effluent limitation shall be the acute toxicity standard. More stringent limits based on the chronic standards may be developed using Best Professional Judgment (BPJ);

(c) For discharges to streams, the effluent limitation shall be the most stringent of the acute standard and the product of the chronic standard and dilution; and

(d) For high rate outfalls, the maximum limit for a particular pollutant is equal to the product of the acute standard and the acute dilution factor determined according to Section II.B.4 of the STCP. More stringent limits based on chronic standards may be developed using BPJ.

(2) WQBELs based on Human Health Standards. The STCP specifies that the fish consumption standards are based upon the bioaccumulation of toxics in aquatic organisms followed by consumption by humans. Limits based on the fish consumption standards should be applied as 30-day averages for non-carcinogens and annual averages for carcinogens.

The discharge from this facility is considered to be a marine discharge through an outfall that is not submerged. Therefore, for pollutants with reasonable potential, the draft permit establishes, on a pollutant by pollutant basis, daily maximum effluent limitations based on saltwater acute aquatic life standard and average monthly effluent limitations for non-carcinogens or annual average effluent limitations for carcinogens based on the human health standard.

WQBELs established in the draft permit are discussed in detail below.

(3) Calculation of Pollutant-Specific WQBELs

The following equations were used to calculate reasonable potential for the pollutants below.

Projected Maximum RWC = MEC x $99\%_{ratio}$ x Dm

Where:

RWC	=	Receiving water concentration
MEC	=	Maximum effluent concentration reported
$99\%_{ratio}$	=	The 99% ratio from Table 3-1 in the TSD or calculated using methods in Section 3.3.2 of the TSD.
Dm	=	Percent Dilution

If the projected maximum receiving water concentration is greater than the applicable water quality standard from HAR, Chapter 11-54, the reasonable potential exists for the pollutant and effluent limitations are established. Pollutants with reasonable potential are discussed below in detail.

(a) Chlorine

i. **Chlorine Water Quality Standards.** The most stringent applicable water quality standard for chlorine is the chronic aquatic life water quality standard of 7.5 µg/L, as specified in HAR, Chapter 11-54. There are no fish consumption standards for chlorine in HAR, Chapter 11-54.

ii. **RPA Results.** The Permittee reported fifty nine data points for chlorine (n = 59), resulting in a CV = 0.43. Based on a CV of 0.43 and 59 samples, the 99% multiplier calculated using methods described in Section 3.3.2 of the TSD was 1.44. As discussed in Part D.2.c.(3), the facility is not granted dilution for chlorine. Therefore, Dm = 100%.

The maximum effluent concentration for chlorine was 8 µg/L.

Projected Maximum RWC = MEC x $99\%_{ratio}$ x Dm
= (8 µg/L) x 1.44 x 1
= 11.5 µg/L

HAR 11-54 Water Quality Standard = 7.5 µg/L

The projected maximum receiving water concentration (11.5 µg/L) exceeds the most stringent applicable water quality standard for this pollutant (7.5 µg/L), demonstrating reasonable potential.

Therefore, the draft permit establishes effluent limitations for chlorine.

iii. **Chlorine WQBELs.** WQBELs for chlorine are calculated using STCP procedures and are based on the acute aquatic life water quality standard for chlorine. The proposed permit establishes a daily maximum effluent limitation for chlorine of 13 µg/L. There are no fish consumption standards for Chlorine, thus the proposed permit does not establish a monthly average effluent limitation for chlorine.

iv. **Feasibility.** The maximum effluent concentration reported for chlorine during the term of the previous permit was 8 µg/L. Since the maximum effluent concentration is less than the proposed maximum daily effluent limitation of 13 µg/L, the DOH has determined that the facility will be able to comply with proposed maximum daily chlorine effluent limitations.

v. **Anti-backsliding.** Anti-backsliding regulations are satisfied because the effluent limitations for chlorine established in this permit are at least as stringent as the effluent limitations established in the previous permit.

e. Ammonia Nitrogen

HAR Chapter 11-54-6(b)(3) establishes the following WQS for ammonia nitrogen:

Parameter	Geometric Mean	Value not to exceed more than 10% of the time	Value not to exceed more than 2% of the time
Ammonia Nitrogen (µg/L)	3.50	8.50	15.00

As demonstrated in Table F-5 of this Fact Sheet, reasonable potential to exceed applicable WQS for ammonia nitrogen has been determined.

Zone of mixing data from June 2008 through November 2012 indicate that assimilative capacity is not available for ammonia nitrogen in the receiving water. Assimilative capacity was evaluated as specified below:

(1) Review EPA's 303(d) list to determine if the water body is impaired for ammonia nitrogen.

The water body is not listed in EPA's 303(d) list for ammonia nitrogen.

(2) Identify nearby control stations to determine the "decision unit" for analysis.

Control Stations 4 and 5 are the available reference station and have been identified as the applicable control stations for evaluating assimilative capacity and constitutes the decision unit for the analysis.

(3) Data from all stations are aggregated together to represent the decision unit and generate annual geomeans. To ensure adequate assimilative capacity, the highest annual geomean for the decision unit shall not exceed 90 percent of the applicable WQS.

The resulting geomeans were:

Year	Result (µg/L)
2008	4.5
2009	0.9
2010	1.8
2011	1.8
2012	1.0

The highest annual geomean for the decision unit of 4.5 µg/L is greater than 90 percent of the applicable WQS (3.2 µg/L). Based on this objective, assimilative capacity is not present in the receiving water.

(4) Consider other available information if available, including studies, reports, and receiving water data trends.

The annual geomeans for the last four years of data show a trend of lowered concentrations of ammonia nitrogen in the receiving water. On average, the geomeans for the last four (4) years represent a decrease of approximately 69 percent from the highest annual geomean and is below 90 percent of the applicable WQS. Therefore assimilative capacity has been granted for ammonia nitrogen based on receiving water data trends.

The Permittee shall be required to conduct a ZOM dilution study to establish available dilution at the edge of the ZOM and verify that assimilative capacity within the receiving water exists for ammonia nitrogen.

Because the available dilution at the edge of the ZOM is not currently known, end-of-pipe water quality-based effluent limitations cannot be determined. However, WQS exceedances at the edge of the ZOM occurred over the previous permit term, indicating that current effluent concentrations have the potential to exceed the available dilution for ammonia nitrogen. In the absence of a known dilution within the ZOM, and in addition to applicable receiving water limitations and requirements to evaluate available dilution

at the edge of the ZOM, this permit establishes performance-based effluent limitations for ammonia nitrogen to minimize the potential for WQS exceedances within the receiving water.

Effluent concentrations for ammonia nitrogen from September 2008 to August 2013 indicate effluent concentrations as high as 4,300 µg/L. A performance-based single sample effluent limitation of 4,300 µg/L has been established based on the effluent concentration observed over the previous permit term.

Anti-backsliding regulations are satisfied because effluent limitations were not established in the previous permit for ammonia nitrogen, thus these limitations are at least as stringent as the previous permit.

f. pH

The Permittee was previously granted a ZOM for pH. The pH value at the edge observed at the edge of the ZOM ranged between 8.1 and 8.2 s.u. and is within the water quality standards for open coastal waters in HAR, Section 11-54-6(b)(3). Thus, the technology-based effluent limitations of between 6.0 to 9.0 at all times appears to be protective of water quality outside the ZOM and has been carried over.

g. Enterococcus

The discharge consists of treated sewage which may contain pathogens at elevated concentrations if not properly disinfected, sufficient to impact human health or the beneficial uses of the receiving water. Consistent with 3.3 of EPA's TSD, the regulatory authority should consider additional information discussed under Section 3.2 (i.e., type of industry, type of POTW, type of receiving water and designated uses, etc.) when evaluating reasonable potential. Reasonable potential can be determined without effluent or receiving water exceedances of applicable water quality criteria. Because the facility is a POTW, and pathogens are characteristic of treated municipal wastewater, and the beneficial uses of the receiving water include recreation where human contact may occur, reasonable potential for enterococcus has been determined. To ensure the protection of human health, this permit establishes effluent limitations for enterococcus.

HAR, Section 11-54-8(b) establishes water quality objectives for marine recreational waters within 300 meters (1,000 feet) of shore. As discussed in Part E.3.a of this Fact Sheet, the draft permit adheres to receiving water limitations for marine recreational waters within 300 meters (1,000 feet) from shore based on State regulations contained in HAR, Chapter 11-54. The discharge consists of treated sewage which may contain pathogens at elevated concentrations if not properly disinfected, sufficient to impact human health or the beneficial uses of the receiving water. To ensure the protection

of human health, this permit establishes effluent limitations for enterococcus. Applicable criteria are established in HAR, Section 11-54-8(b).

The draft permit establishes the following end-of-pipe effluent limitations and monitoring requirements for enterococcus at Outfall Serial No. 001. The MEC for enterococcus was 6 CFU per 100 milliliters.

(1) A monthly geometric mean of 7 CFU per 100 milliliters from HAR Section 11-54-8(b).

The previous permit included a geometric mean of 7 CFU per 100 milliliters based on the State enterococcus standard at the time. However, as explained by the DOH in *Rationale for Proposed Revisions to Hawaii Administrative Rules Title 11 Department of Health Chapter 54 Water Quality Standards*, the State enterococcus standard of 7 CFU per 100 milliliters was based mainly on a health risk assessment, not as a regulatory limit. In the rationale, the DOH recommended that the State enterococcus water quality standard be revised to a geometric mean of 35 CFO per 100 milliliters and a single sample maximum value of 104 CFO per 100 ml to be consistent with federal standards. The new standards were adopted by the DOH on June 15, 2009, and approved by the EPA on March 19, 2010.

Consistent with HAR, Chapter 11-54-1.1.(b), where the quality of the waters exceed levels necessary to support propagation of fish, shellfish, and wildlife and recreation, in and on the water, that quality shall be maintained and protected unless a lowering of water quality is necessary to accommodate important economic or social development. Because the Permittee has the facilities necessary to achieve compliance with the previous effluent limitation, and has not demonstrated degradation of water quality is necessary to accommodate important economic or social development, the maximum monthly geometric mean limitation of 7 CFU per 100 milliliters has been carried over.

(2) A single sample maximum of 104 CFU per 100 milliliters has been applied as an effluent limitation in the draft permit based on HAR Section 11-54-8(b), requirements for marine recreational waters within 300 meters of the shoreline.

h. Whole Effluent Toxicity (WET)

WET limitations protect receiving water quality from the aggregated toxic effect of a mixture of pollutants in an effluent. WET tests measure the degree of response of exposed aquatic test organisms to an effluent or receiving water. The WET approach allows for protection of the narrative criterion specified in HAR, Chapter 11-54-4(b)(2) while implementing Hawaii's numeric

WQS for toxicity. There are two types of WET tests – acute and chronic. An acute toxicity test is conducted over a short period of time and measures mortality. A chronic toxicity test is generally conducted over a longer period of time and may measure mortality, reproduction, or growth.

40 CFR 122.44(d)(1) requires that permits contain limits on WET when a discharge has reasonable potential to cause or contribute to an exceedance of a water quality standard for toxicity. The permit does not require WET testing because it is not a major POTW, the presence of toxic pollutants in the effluent was not identified in the permit application, and this facility does not receive any industrial wastewater.

i. Summary of Final Effluent Limitations

HAR, Section 11-55-20 requires that daily quantitative limitations by weight be established where possible. Thus, in addition to concentration based-effluent limitations, mass-based effluent limitations (in pounds per day) have been established where applicable based on the following formula:

lbs/day = 8.34 * concentration (mg/L) * flow (MGD)

40 CFR 122.45(b)(1) requires that mass-based effluent limitations for POTWs be based on design flow. The previous permit established mass based effluent limitations on a design flow of 0.35 MGD. This draft permit continues to include mass-based effluent limitations using a flow of 0.35 MGD.

Mass-based effluent limitations in the previous permit were established in kg/day. However, to be consistent with other permits in the State, the draft permit establishes mass-based effluent limitations in lbs/day. Limitations expressed as kg/day are duplicative and therefore have not been established. The limitations established in this permit meet applicable anti-backsliding and antidegradation requirements, as discussed in Part D.2.j and D.2.k of this Fact Sheet.

The following tables list final effluent limitations at Outfall Serial No. 001 contained in the draft permit and compare them to effluent limitations contained in the previous permit.

Table F-6. Summary of Final Effluent Limitations – BOD_5 and TSS

Parameter	Units	Effluent Limitations Contained in the Previous Permit			Proposed Effluent Limitations		
		Average Monthly	Average Weekly	Maximum Daily	Average Monthly	Average Weekly	Maximum Daily
Biochemical Oxygen Demand (BOD) (5-day @ 20 Deg. C)	mg/L	30	45	--	30	45	--
	kg/day[1]	40	60	--	--	--	--
	lbs/day[2]	--	--	--	88	131	--
	% Removal	As a monthly average, not less than 85 percent removal efficiency from the influent stream.			The average monthly percent removal shall not be less than 85 percent.		
Total Suspended Solids (TSS)	mg/L	30	45	--	30	45	--
	kg/day[1]	40	60	--	--	--	--
	lbs/day[2]	--	--	--	88	131	--
	% Removal	As a monthly average, not less than 85 percent removal efficiency from the influent stream.			The average monthly percent removal shall not be less than 85 percent.		

[1] Based on a design flow of 0.35 MGD. Effluent limitation previously applied as kg/day.
[2] Based on a design flow of 0.35 MGD. Compliance with mass-based effluent limitations shall be determined using the following formula: lbs/day = 8.34 * concentration (mg/L) * flow (MGD).

Table F-7. Summary of Final Effluent Limitations – All Other Pollutants

Parameter	Units	Effluent Limitations Contained in the Previous Permit			Proposed Effluent Limitations		
		Average Annual	Average Monthly	Maximum Daily	Average Annual	Average Monthly	Maximum Daily
pH	s.u.	Not less than 6.0 and not greater than 9.0			Not less than 6.0 and not greater than 9.0		
Total Residual Chlorine	µg/L	--	--	13.0	--	--	13.0
	lbs/day[1]	--	--	--	--	--	0.04
Enterococci	CFU/100 ml	--	7[2]	--	--	7[2]	104[3]
Ammonia Nitrogen	µg/L	--	--	--	--	--	4,300[4]
	lbs/day[1]	--	--	--	--	--	12.6[4]

[1] Based on a design flow of 0.35 MGD.
[2] Effluent limitation established as a geometric mean with minimum monitoring frequency of 5 days/quarter with samples spaced to cover a period of between 25 and 30 days.
[3] Effluent limitation expressed as a single sample maximum.
[4] Applied as a single sample maximum.

j. Satisfaction of Anti-Backsliding Requirements

The CWA specifies that a revised permit may not include effluent limitations that are less stringent than the previous permit unless a less stringent limitation is justified based on exceptions to the anti-backsliding provisions contained in CWA Sections 402(o) or 303(d)(4), or, where applicable, 40 CFR 122.44(l).

Federal anti-backsliding regulations at 40 CFR 122.44(l)(i) allows for effluent limitations in a reissued permit to be less stringent if information is available which was not available at the time of the permit issuance and which have justified the application of a less stringent effluent limitation. The draft permit retains all effluent limitations from the previous permit. Therefore, effluent limitations and requirements for all pollutants are at least as stringent as those in the previous permit and are consistent with State and federal anti-backsliding regulations.

k. Satisfaction of Antidegradation Policy Requirements

The DOH established the State antidegradation policy in HAR, Section 11-54-1.1, which incorporates the federal antidegradation policy at 40 CFR 131.12. HAR, Section 11-54-1.1 requires that the existing quality of waters be maintained unless degradation is justified based on specific findings demonstrating that allowing lower water quality is necessary to accommodate economic or social development in the area in which the waters are located. All effluent limitations and requirements of the draft permit are retained from the previous permit. Therefore, the permitted discharge is consistent with antidegradation provisions of 40 CFR 131.12 and HAR, Section 11-54-1.1. The impact on existing water quality will be insignificant and the level of water quality necessary to protect the existing uses will be maintained and protected.

E. Rationale for Receiving Water and Zone of Mixing Requirements

1. Summary of ZOM Water Quality Standards and Monitoring Data

The following are effluent quality monitoring results for HAR, Chapter 11-54, specific water quality criteria parameters that were provided in the ZOM Application on June 25, 2013, and applicable ZOM water quality criteria from 11-54-6(b)(3).

Table F-8. ZOM Monitoring Data

Parameter	Units	Applicable Water Quality Standard	Maximum Reported Concentration[1]
Total Nitrogen	µg/L	150[2]	18,675
Ammonia Nitrogen	µg/L	3.5[2]	235
Nitrate + Nitrite	µg/L	5[2]	17,775
Orthophosphate Phosphorus	µg/L	--	2,780
Total Phosphorus	µg/L	20[2]	2,235
Chlorophyll a	µg/L	0.30[2]	0.08
Turbidity	NTU	0.50[2]	1.05
TSS	mg/L	--	6.37
pH	s.u.	[3]	6.90
Dissolved Oxygen	mg/L	[4]	1.7

Parameter	Units	Applicable Water Quality Standard	Maximum Reported Concentration[1]
Temperature	°C	[5]	24.2
Salinity	ppm	[6]	<100
Zinc	µg/L	95	26

[1] Source: ZOM Application dated June 25, 2013.
[2] Water quality standard expressed as a geometric mean.
[3] pH shall not deviate more than 0.5 units from a value of 8.1, except at coastal locations where and when freshwater from stream, storm drain, or groundwater discharge may depress the pH to a minimum level of 7.0.
[4] Dissolved oxygen shall not be less than 75 percent saturation.
[5] Temperature shall not vary more than 1° Celsius from ambient conditions.
[6] Salinity shall not vary more than 10 percent from natural or seasonal changes considering hydrologic input and oceanographic factors.

2. Existing Receiving Water Limitations and Monitoring Data

a. Offshore Stations

The following are a summary of the geometric mean values reported for each offshore monitoring location by the Papaikou Wastewater Treatment Plant, in the monthly and quarterly DMRs from June 2008 through November 2012.

Table F-9. Offshore Monitoring Stations

Station	Maximum Geometric Mean[1]					
	Nitrate + Nitrite Nitrogen[2]	Ammonia Nitrogen[2]	Total Nitrogen[2]	Total Phosphorus[2]	Turbidity[2]	Chlorophyll a[2]
	µg/L	**µg/L**	**µg/L**	**µg/L**	**NTU**	**µg/L**
1	2.38	4.34	106.18	13.79	0.24	0.12
2	2.14	8.46	124.57	15.00	0.29	0.14
3	2.03	1.43	132.51	14.10	0.23	0.16
4 (Control Station)	0.74	10.18	123.98	15.62	0.21	0.16
5 (Control Station)	4.52	2.10	100.85	13.86	0.66	0.18
Applicable Water Quality Standard	5.0	3.5	150	20	0.50	0.30

[1] Source: Monthly and Quarterly DMRs submitted by the Papaikou Wastewater Treatment Plant from June 2008 through November 2012.
[2] Reported geometric mean is the maximum annual geometric mean at each station.

3. Proposed Receiving Water Limitations

a. Basic Water Quality Criteria Applicable to the Facility

(1) The discharge shall not cause a violation of any applicable water quality standard for receiving waters adopted by the DOH, as required by the

Water Quality Act of 1987 (P.L. 100-4) and regulations adopted thereunder. The DOH adopted water quality standards specific for open coastal waters in HAR, Chapter 11-54. The draft permit incorporates receiving water limitations and requirements to ensure the facility does not exceed applicable water quality standards.

(2) The Pacific Ocean at Waipahi is designated as "Class A Wet Open Coastal Waters". As such, the discharge from the facility shall not interfere with the attainment or maintenance of that water quality which assures protection of public water supplies and the protection and propagation of a balanced indigenous population of shellfish, fish, and wildlife and allows recreational activities in and on the water. The draft permit incorporates receiving water limitations for the protection of the beneficial uses of Pacific Ocean.

The Permittee is required to comply with the HAR, Chapter 11-54, Basic Water Quality Criteria of which has been incorporated as part of the draft permit under Section 1 of the DOH Standard NPDES Permit Conditions (Version 14).

(3) The specific criteria in HAR, §11-54-8(b) for recreational areas in marine recreational waters is adhered to through the enterococcus effluent limitation of a geometric mean of 7 CFU/100 ml and 104 CFU/ml single sample maximum, as explained in Part D.2.g (Enterococcus) of the Fact Sheet. The enterococcus effluent limitation of a geometric mean of 7 CFU/100 ml is more stringent than the HAR §11-54-8(b) recreational waters within 300 meters (1,000 feet) of the shoreline criteria (a geometric mean of 35 CFU/100 ml) and will ensure that the facility is in compliance with the recreational waters limitation.

b. Specific Criteria for "Class A Wet Open Coastal Waters"

Table F-10. Specific Criteria for "Class A Wet Open Coastal Waters"

Parameter	Units	Geometric mean not to exceed the given value	Not to exceed the given value more than 10% of the time	Not to exceed the given value more than 2% of the time
Total Nitrogen	µg/L	150.00	250.00	350.00
Ammonia Nitrogen	µg/L	3.50	8.50	15.00
Nitrate + Nitrite Nitrogen	µg/L	5.00	14.00	25.00
Total Phosphorus	µg/L	20.00	40.00	60.00
Light Extinction Coefficient	k units	0.20	0.50	0.85
Chlorophyll a	µg/L	0.30	0.90	1.75
Turbidity	NTU	0.50	1.25	2.00

Parameter	Units	Geometric mean not to exceed the given value	Not to exceed the given value more than 10% of the time	Not to exceed the given value more than 2% of the time
pH	standard units	Shall not deviate more than 0.5 standard units from a value of 8.1, except at coastal locations where and when freshwater from stream, stormdrain, or groundwater discharge may depress the pH to a minimum level of 7.0.		
Dissolved Oxygen	% saturation	Shall not be less than 75 percent saturation, determined as a function of ambient water temperature and salinity.		
Temperature	°C	Shall not vary more than 1°C from ambient conditions.		
Salinity	ppt	Shall not vary more than 10 percent from natural or seasonal changes considering hydrologic input and oceanographic factors.		

The specific water quality criteria listed at HAR, Section 11-54-6(b)(3) for "Class A Wet Open Coastal Waters" shall apply to the treated wastewater through Outfall Serial No. 001, as seen in the table above, at the edge of the mixing zone. The discharges from Outfall Serial No. 001 shall comply with the values listed in the table above, except that the specific water quality criteria for the parameters may be exceeded within the boundaries of the ZOM.

These requirements are consistent with HAR, Chapter 11-54 and retained from the previous permit.

c. Zone of Mixing (ZOM)

HAR, Chapter 11-54 allows for a ZOM, which is a limited area around outfalls to allow for initial dilution of waste discharges, if the ZOM is in compliance with requirements in HAR, Section 11-54-9(c). The Permittee has requested that the existing ZOM for the assimilation of treated wastewater be retained. Consistent with the current permit, the ZOM requested is a circular radius of 3,050 feet centered about Outfall Serial No. 001. Figure 2 in the draft permit shows the ZOM.

(1) Prior to the renewal of a ZOM, the environmental impacts, protected uses of the receiving water, existing natural conditions, character of the effluent, and adequacy of the design of the outfall must be considered. The following findings were considered:

(a) The Permittee's ZOM application indicates that the existing physical environment is a marine bottom, lava rocks. The ZOM application indicates that no major physical effects are expected due to the continuation of the ZOM.

(b) No information provided in the ZOM application indicates that dilution would be negatively impacted by current conditions. Further, the

permit requires the Permittee to conduct a ZOM Dilution Analysis Study to evaluate the available dilution at the edge of the ZOM within three (3) years of the effective date of the permit and verify the presence or absence of assimilative capacity for nutrients with reasonable potential.

(c) The Permittee's ZOM application indicates that, based on monitoring data on the existing chemical environment, there seems to be no difference in water quality between the ZOM stations and control stations. Therefore, there appears to be no major environmental effects on the receiving water from the discharge.

(d) Effluent data and receiving water data are provided in Tables F-5, F-8, and F-9 of this Fact Sheet. The effluent and receiving water data indicate there is a potential for nutrient (ammonia nitrogen) impairment as discussed in Part D.2.e of this Fact Sheet. The ZOM application states that biological species along the coast are typical of species found in coastal waters of East Hawaii and there are no apparent biological effects on the receiving water.

(2) HAR 11-54-9(c)(5) prohibits the establishment of a ZOM unless the application and supporting information clearly show: that the continuation of the ZOM is in the public interest; the discharge does not substantially endanger human health or safety; compliance with the WQS would produce serious hardships without equal or greater benefits to the public; and the discharge does not violate the basic standards applicable to all waters, will not unreasonably interfere with actual or probably use of water areas for which it is classified, and has received the best degree of treatment or control. The following findings were made in consideration of HAR 11-54-9(c)(5):

(a) The Facility treats domestic wastewater for approximately 1,900 people (1,400 from Papaikou and 500 from Paukaa) and is a necessity for public health. There are no other treatment facilities currently servicing this area and a cessation of function or operation would cause severe hardship to the residents.

(b) No known information indicates that the discharge is causing or contributing to conditions that substantially endanger human health or safety.

(c) The feasibility and costs to install treatment necessary to meet applicable WQS end-of-pipe, or additional supporting information, were not provided by the Permittee to demonstrate potential hardships. As discussed in Part E.3.c.(2)(a), the operation of the Facility has been found to benefit the public. No information is known that would revise

the finding during the previous permit term that compliance with the applicable WQS without a ZOM would produce serious hardships without equal or greater benefits to the public.

(d) As discussed in Part D.2.c.(5)(c) of this Fact Sheet, effluent data indicates the presence of pollutants in excess of applicable WQS. However, this permit establishes water quality-based effluent limitations based on WQS. The Permit requires compliance with the effluent limitations and conditions which are protective of the actual and probable uses of the receiving water and implement applicable technology-based effluent limitations.

The Department has determined that the ZOM satisfies the requirements in HAR, Section 11-54-09(c)(5).

The establishment of the ZOM is subject to the conditions specified in Part C of the draft permit. The draft permit incorporates receiving water monitoring requirements which the DOH has determined are necessary to evaluate compliance of the Outfall Serial No. 001 discharges with the applicable water quality criteria, as described further in section F.4 of this Fact Sheet.

F. Rationale for Monitoring and Reporting Requirements

40 CFR 122.41(j) specify monitoring requirements applicable to all NPDES permits. HAR, Section 11-55-28 establishes monitoring requirements applicable to NPDES permits within the State of Hawaii. 40 CFR 122.48 and HAR, Section 11-55-28 require that all NPDES permits specify requirements for recording and reporting monitoring results. The principal purposes of a monitoring program are to:

- Document compliance with waste discharge requirements and prohibitions established by the DOH;
- Facilitate self-policing by the Permittee in the prevention and abatement of pollution arising from waste discharge;
- Develop or assist in the development of limitations, discharge prohibitions, national standards of performance, pretreatment and toxicity standards, and other standards; and,
- Prepare water and wastewater quality inventories.

The draft permit establishes monitoring and reporting requirements to implement federal and State requirements. The following provides the rationale for the monitoring and reporting requirements contained in the draft permit.

1. Influent Monitoring

Influent monitoring is required to assess the performance of treatment facilities, and to evaluate compliance with effluent limitations. Influent monitoring requirements for flow, BOD_5, and TSS have been retained from the previous permit. Additionally, influent monitoring for ammonia nitrogen, nitrate plus nitrite, total nitrogen, and total phosphorus has been established in the draft permit in order to determine if said pollutants are present in the influent in elevated concentrations, evaluate treatment performance, and characterize the influent for future permitting efforts. The proposed influent water monitoring requirements are specified in Part A.1 of the draft permit.

2. Effluent Monitoring

a. Outfall Serial No. 001

The following monitoring requirements are applicable at Outfall Serial No. 001.

(1) Monitoring requirements for total nitrogen, ammonia nitrogen, nitrate + nitrite nitrogen, total phosphorus, and turbidity are retained from the previous permit to determine compliance with effluent limitations, where applicable, and to enable comparison with the receiving water ZOM monitoring results to evaluate if the facility effluent is contributing to elevated concentrations of said pollutants.

(2) Monitoring requirements for flow have been retained from the previous permit to calculate pollutant loading and to determine compliance with mass-based effluent limitations.

(3) Monitoring requirements for pH, BOD_5, chlorine, enterococcus, and TSS have been retained from the previous permit in order to determine compliance with effluent limitations and to collect data for future RPAs.

3. Whole Effluent Toxicity Monitoring

As stated in Section D.2.h above, this permit does not require WET testing because it is not a major POTW, the presence of toxic pollutants was not identified in the permit application, and this facility does not receive any industrial wastewater.

4. Receiving Water Quality Monitoring Requirements

a. ZOM Dilution Analysis Study

Permit requirements have been based on a limited assessment of assimilative capacity within the receiving water. The Discharger is required to

confirm that assimilative capacity is available in the receiving water for ammonia nitrogen.

b. Offshore Water Quality Monitoring

Offshore water quality monitoring is required to determine compliance with State water quality standards, as described in Part C of the draft permit. The draft permit requires the Permittee to monitor three stations along the boundary of the ZOM. Additionally, the draft permit requires the Permittee to monitor at two control station outside the boundary of the ZOM. All monitoring requirements for offshore stations are retained from the previous permit and included in Part D.1 of the draft permit.

c. Specific Water Quality Parameters Effluent Requirements

The previous permit included operation performance thresholds for total nitrogen, ammonia nitrogen, nitrate + nitrite nitrogen, total phosphorus, and turbidity and includes a requirement for an initial investigation evaluation plan if the threshold values are exceeded in the effluent. Effluent data from the term of the previous permit indicates ammonia nitrogen has reasonable potential to cause or contribute to an exceedance above water quality standards for this pollutant. Thus, effluent limitations for ammonia nitrogen are established in this permit. Effluent data from the term of the previous permit indicates that total nitrogen, nitrate + nitrite nitrogen, total phosphorus, and turbidity do not have reasonable potential to cause or contribute to an exceedance above water quality criteria; thus, they are not expected to be present at levels that will degrade ambient water quality. Therefore, the draft permit does not retain operational performance thresholds for total nitrogen, nitrate + nitrite nitrogen, total phosphorus, and turbidity. However, monitoring requirements for these pollutants have been retained.

G. Rationale for Provisions

1. Standard Provisions

The Permittee is required to comply with DOH Standard NPDES Permit Conditions (Version 14), which are included as part of the draft permit.

2. Monitoring and Reporting Requirements

The Permittee shall comply with all monitoring and reporting requirements included in the draft permit and in the DOH Standard NPDES Permit Conditions (Version 14).

3. Special Provisions

a. Reopener Provisions

The draft permit may be modified in accordance with the requirements set forth at 40 CFR 122 and 124, to include appropriate conditions or limitations based on newly available information, or to implement any new state water quality criteria that are approved by the EPA.

4. Special Provisions for Municipal Facilities

a. Industrial Pretreatment Requirements

The federal CWA Section 307(b), and federal regulations, 40 CFR 403, require POTWs to develop an acceptable industrial pretreatment program. A pretreatment program is required to prevent the introduction of pollutants, which will interfere with treatment plant operations or sludge disposal, and prevent pass through of pollutants that exceed water quality objectives, standards or permit limitations. Pretreatment requirements are imposed pursuant to CWA Sections 307(b), (c), (d), and 402(b), 40 CFR 125, 40 CFR 403, and in HAR, Section 11-55-24.

The draft permit does not include pretreatment requirements because 40 CFR Section 403 does not apply to this facility. A pretreatment program is not required since no industrial users discharge to the facility. The previous permit also did not contain pretreatment requirements.

b. Biosolids Requirements

The use and disposal of biosolids is regulated under federal laws and regulations, including permitting requirements and technical standards included in 40 CFR 503, 257, and 258. The biosolids requirements in the draft permit are in accordance with 40 CFR 257, 258, and 503, are based on the previous permit and are consistent with NPDES permits issued to other Hawaii POTWs.

5. Other Special Provisions

a. Wastewater Pollution Prevention Program

The draft permit requires the Permittee to submit a wastewater pollution control plan by May 31 each year. This provision is retained from the previous permit and is required to allow DOH to ensure that the Permittee is operating correctly and attaining maximum treatment of pollutants discharged by considering all aspects of the wastewater treatment system. This provision in included in Part E of the draft permit.

b. Wastewater treatment facilities subject to the draft permit shall be supervised and operated by persons possessing certificates of appropriate grade, as determined by the DOH. If such personnel are not available to staff the wastewater treatment facilities, a program to promote such certification shall be developed and enacted by the Permittee. This provision is included in the draft permit to ensure that the facility is being operated correctly by personnel trained in proper operation and maintenance. This provision is retained from the previous permit and included in Part H.1 of the draft permit.

c. The Permittee shall maintain in good working order a sufficient alternate power source for operating the wastewater treatment and disposal facilities. This provision is retained from the previous permit in order to ensure that if a power failure occurs, the facility is well equipped to maintain treatment operations until power resumes. If an alternate power source is not in existence, the draft permit requires the Permittee to halt, reduce, or otherwise control all discharges upon the reduction, loss, or failure of the primary source of power. This provision is included in Part H.2 of the draft permit.

d. Waste Load Allocation (WLA) Implementation and Monitoring Plan

The proposed permit incorporates the requirement for the Permittee to develop and implement a facility-specific WLA implementation and monitoring plan when a TMDL which specifies WLAs applicable to the Permittee's facility is approved by the EPA. The Permittee shall incorporate and implement the facility-specific WLA implementation and monitoring plan as part of the facility's Monitoring Program, as appropriate. The facility-specific WLA implementation and monitoring plan shall include Data Quality Objectives (DQOs) and Quality Assurance (QA) and Quality Control (QC) methods. This requirement is retained from the previous permit and is consistent with requirements for similar facilities within the State.

H. Public Participation

A public notice of proposed permit was published in the ***Hawaii Tribune-Herald*** on March 6, 2014, soliciting public comment on the proposed action for a 30-day period. The permit application, applicable documents, proposed permit and rationale were available for public review at the CWB office. Persons wishing to comment upon or object to the proposed NPDES permit in accordance with HAR, Sections 11-55-09(b) and 11-55-09(d), had the opportunity to submit their comments in writing either in person or by mail, to:

Clean Water Branch
Environmental Management Division
919 Ala Moana Boulevard, Room 301
Honolulu, HI 96814-4920

Comments were received from the Permittee. As the result of logical outgrowth of public comment, Parts B.1.a.(1), (2), and b under Specific Water Quality Criteria for Recreational Waters, were removed from the permit. The enterococcus effluent limitation specified in Part A.1 of the permit is more stringent than the HAR §11-54-8(b) recreational waters within 300 meters of the shoreline criteria (which was removed as indicated above) and will ensure that the facility is in compliance with the recreational waters limitation. A Response to Comments document is attached.